

Development of Ubaya Tracer Study Website

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Abstract. One of Administrative requirements for accreditation submission of institution of higher education by National Accreditation Board for Higher Education (BAN-PT) is to administer a Tracer Study for all institution of higher education according to the rule of Direktorat Jenderal Pendidikan Tinggi (DITJEN DIKTI). Tracer study is an alumni tracking study that which is conducted after student has graduated from a university. This study is conducted to identify university contribution on the graduate's competencies against working environment. In this content, University of Surabaya (UBAYA) distributes questionnaire to its alumni as a way to administer tracer study. Questionnaire are developed using QTAFI version 2, an online questionnaire maker application. Although this application useful but there are some deficiencies has been found. This research aims to develop web based application to assist questionnaire management that is specifically implemented on UBAYA Tracer Study Administration. This application refers to QTAFI main features and also facilitated additional specific requirement, some revision and database redesign. Verification phase make sure the application error-free and validation phase proofs that all of user requirement have been satisfied. This application is integrated with university information system and allows to monitoring the response of respondents in real time. Validation results of the application shows that the application is feasible to use and very helpful to manage questionnaire and respondents but this application is required to be developed in mobile apps.

1. Introduction

One of Administrative requirements for accreditation submission of institution of higher education by National Accreditation Board for Higher Education (BAN-PT) is to administer a Tracer Study for all institution of higher education according to the rule of Direktorat Jenderal Pendidikan Tinggi (DITJEN DIKTI). Tracer study is an alumni tracking study that which is conducted after student has graduated from a university. This study is conducted to identify employment profile of graduates, their undergraduate experience, and university contribution on the graduates competencies against working environment so that it can be use as indicators to make sure that their curriculum are align with industrial needs [1][2][3][4]. In UBAYA, tracer study was conducted by distributed questionnaire to all of alumni from 8 faculties that consists of 20 study programmes as a way to administer tracer study. The department that has responsible to administer this Tracer Study is Career Assistance Center (CAC). For that reason, CAC must has coordination with faculties in order to arrange appropriate questionnaire, to uncover some specific information during the Tracer Study. CAC UBAYA has developed and administered the tracer study's questionnaire using QTAFI version 2 software. Refer to Ratnaningsih[5], QTAFI which stand for Questions, Tables, and Figures is a web based software that developed in order to assist questionnaire management, survey processing and data analysis. QTAFI

has many features that isrelated to questionnaire format making and questionnaire coding documentation development. Although this application seems to be useful enough but some deficiencies along UBAYA tracer study management, has been found during the analysis phase. Several requirements that QTAFI fail to cater are: ability to set opening and closing questionnaire period, presenting dashboard report of survey result, informative presentation of survey result in excel format. Beside, QTAFI only has one table for storing questionnaire result data causing data analysis and processing becomes ineffective. This research aims to develop web based application to assist questionnaire management that is exclusively implemented on UBAYA Tracer Study Administration. The new system complement QTAFI features with all of requirements that UBAYA needs to administer the Tracer Study, such as role differentiation between questionnaire creator and questionnaire data processor; features to support add, update delete questionnaires' questions and answer's options; questionnaires opening and closing period setting that divide into 6 and 24 months; System notification about questionnaires opening and closing time periode. This system shifting from open source website to UBAYA's private website allows UBAYA to redesign and re-implement the system anytime as needed, along to the incoming UBAYA requirements in the future.

2. Literature Review

Tracer Study is survey of graduates from institutions of higher education [6]. Graduates' unique perspective regarding the contribution of education to their lives after graduation. This applies particularly to graduates' professional lives, since alumni studies may provide an opportunity to assess higher education's effectiveness in preparing graduates for their careers[7]. Figure 1 shows 4 reasons why should we conduct tracer studies [6]:

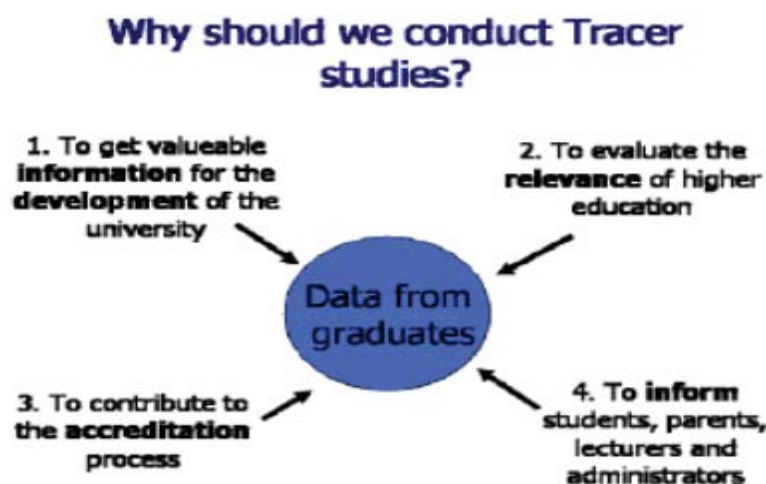


Figure 1.Why We Conduct Tracer Studies.

Those information can be synthesize from surveysresult that may distributed in the form of questionnaire for higher education graduation. There are three application of alumni surveys and how they are use to reach key audience to have positive impact on public policy, planning and advancement of higher education institution [8]. They are :

1. Alumni outcome approach, institutional quality and effectiveness can be measured by monitoring alumni accomplishment in the years of degree completion, like job stisfaction, income etc.
2. Engagement and competencies focusing in alumni outcomes as a mechanism to measure institutional excellence and guide institutional reform has been criticized over the past ten years.

3. Alumni Giving. In this context, understanding factors that lead alumni to support their almamater is critically important to maintaining the quality of the institutional program.

Schomburg introduce basics steps of survey as describe in Table1.

Table1.Phases of Surveys and Major Worktasks.

Phases	Major work tasks	Duration
1. Concept and Instrument Development	<ul style="list-style-type: none"> • Definition of survey objectives (selection of themes to be investigated) • Survey design (selection of the cohorts of graduates to be included; strategies for tracing the graduates) • Technical concept for carrying out the survey • Formulation of questions and of response items • Formatting of questionnaires • Pre-test of questionnaires • Printing of questionnaires and other dispatch material 	4 months
2. Data collection	<ul style="list-style-type: none"> • Training of survey team • Distribution and collection of questionnaires • Assurance of high participation (reminder actions) 	4 months
3. Data analysis and report writing	<ul style="list-style-type: none"> • Definition of coding systems for the responses to open questions • Coding of open responses • Data entry and data editing (quality control) • Data analysis • Preparation of survey report • Workshop with students, graduates and employers 	4 months

A set of printed or written questions with a choice of answers, devised for the purposes of a survey or statistical study. Refer to Ian Brace, questionnaire are written in many different ways, to be used in many different situations and with many different data-gathering media [9].

Questionnaire has several benefit, such as problem elicitation and also may improve and develop several things. For example, questionnaire may use to discover level of satisfaction about campus facilities, and helps campus management to determine necessary actions in order to develop campus facilities. Refer to Higher Education Commission in 2012 [10] these are some advantage and disadvantage of using questionnaire. Several advantages of using questionnaire are can be completed anonymously, inexpensive to administer and save time, can ask sensitive questions, etc. Meanwhile there are also several disadvantage such as can be difficult to get a high response rate, answers biased by wording of questions, does not always get the full story.

3. Result and Discussion

Application is developed for four types of users: admin, creator, faculty, and alumni. The right of admin is to create questionnaires, generate pins for alumni, cleaning data, view reports, and create account for new users. The right creator is to create questionnaires and generate pins for alumni. Faculty can only view existing reports. Alumni are respondents who fill out the questionnaire. The right of alumni is only to fill the questionnaire in accordance with the specified period.

The creating questionnaire process involves designing questions and determining the form of answers (multiple choice, linear scale, or open question), creating questionnaires for specific period including the path of questions in the questionnaire, setting period of questionnaires, and determining the alumni who are entitled to fill out the questionnaire.

Figure 2 is home page for the application of Tracer Study for admin/creator/faculty. There is a place in home page to enable user to login. Login process is used to determine the permissions of the user. User is asked to enter a username and password or pin. Based on the username and password or pin that entered, the application will present the features of application in accordance with the access rights. The existence of the classification of access rights, making each user can work and take responsibility in accordance with their access rights.

The application was developed using a database of fifteen integrated support tables. This makes the process of making the questionnaire more flexible, consistent and easy. Figure 3 is an example of page to designing a question and answer type and Figure 4 is the page to create a new questionnaire. The questionnaire setting makes it easy for the admin or creator to create several types of questionnaires, determine the questionnaire period, and determine the alumni who are entitled to fill out the questionnaire. Alumni must have a pin to enable fill out a questionnaire. Pin is generated and sent automatically to the alumni at the first time the alumni have the right to fill out the questionnaire. Generate pins can be done through the page shown in Figure 5. The reports are displayed in graphical form and MS Excel. It makes easy for the admin to perform data cleaning and further analysis. Data cleaning process is a process to split out the valid alumni responses with invalid ones. In this process, admin is entitled to customize the answer of the alumni that not followed the instructions. Example of report can be seen in Figure 6. Alumni who have pin can login to tracer study application and start to fill out the questionnaire in accordance the specified period. An example of a questionnaire filling page can be seen in Figure 7.

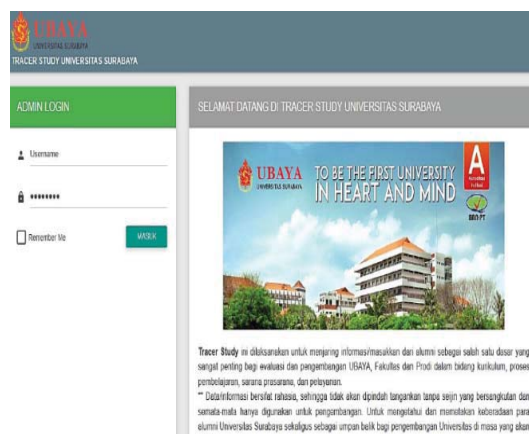


Figure 2. The Home Page of Tracer Study Application For Admin / Creator / Faculty.

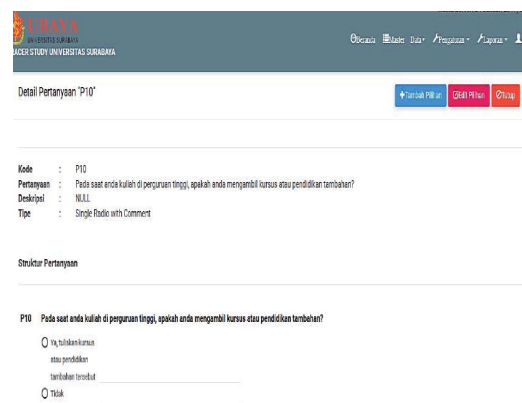


Figure 3. Pages for Designing Questions and Answer Types.



Figure 4. Pages to Create a Questionnaire.

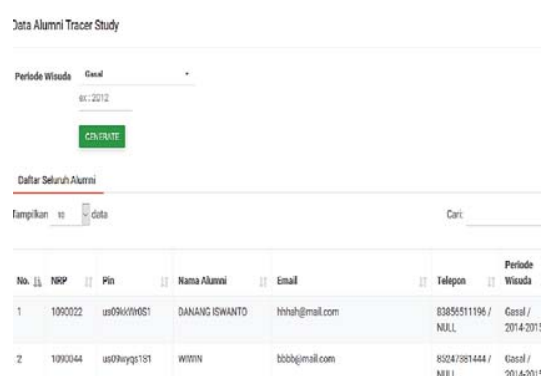


Figure 5. Page for Generate Pins.



Figure 6.Report of Alumni Response on a Question.

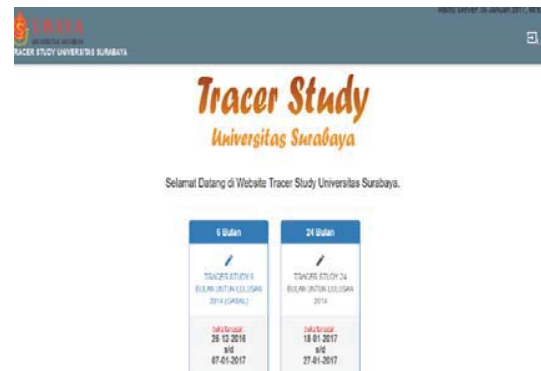


Figure 7.Home Page of Tracer Study Application for Alumni.

Testing is done to ensure that application is eligible to use. Testing was conducted by manager and staffs who are managing the university Tracer Study and alumni. The manager and staffs who are managing the university Tracer Study stated that the existing application is feasible to be used in managing the alumni questionnaires. This application is very helpful in observing the number of respondents who fill out the questionnaire in real time. In addition, they requested that the application be developed in the mobile version and application is added a notification to the alumni to fill in the questionnaire available. Alumni were asked to assess user interface and the ease of use of the application through the developed application. Twelve alumni who responded, on average rated above 4 (scale 1 to 5). Details of alumni response can be seen in Figure 8.

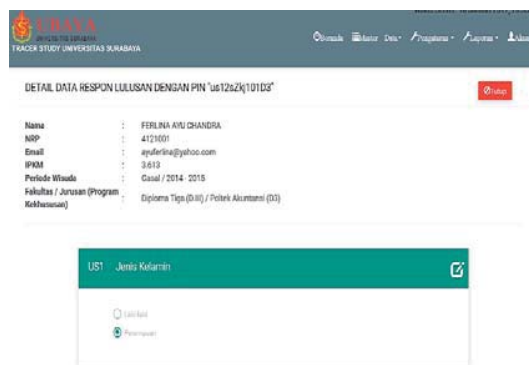


Figure 8a.Questionnaire Filling Page.

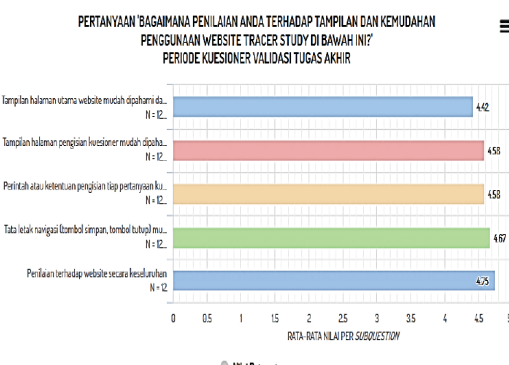


Figure 8b.Statistic for Student / Alumni Response to Tracer Study Application.

4. Conclusion

Tracer study is one of the activities that must be done by every university to get information from alumni and industry about alumni performance, contribution of university curriculum to alumni competence in work field, and current industry needs and the future development. Currently, University of Surabaya has conducted online tracer study by QTAFI software. But there are some needs that cannot be fulfilled by the existing software, such as setting the open and closing period of questionnaire, simplicity to update existing questionnaire and checking respond of respondents, reports in the form of charts and Microsoft Excell, and not yet integrated with university information system. An application which is integrated with university information system was developed to accommodate all the needs. In addition, the application allows to monitoring the response of

respondents in real time. Validation results of the application shows that the application is feasible to use and very helpful to manage questionnaire and respondents but this application is required to be developed in mobile apps. These results strengthen the previous researches that were done by Gines, Bakti and Chandra.

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PROCEEDINGS BOOK

*Sustainable Technology and Innovation:
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PREFACE

WELCOME NOTE FROM INCITE 2017 ORGANIZING COMMITTEE CHAIRMAN

Rector of University of Surabaya: Prof. Dr. Joniarto Parung,
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Fellow Participants, Distinguished Guests, Ladies and Gentlemen:

First of all, welcome to Bali, Indonesia, and welcome to the first International Conference on Informatics, Technology and Engineering (InCITE) 2017!

It is still vivid in my memory, one and a half year ago, when some colleagues and officials of our Faculty of Engineering discussed the possibility of organizing an international event, to substitute national seminars that some of our study programs held annually or bi-annually. The call for an international event is a necessity given 30 years of Faculty of Engineering's existence, and the dawn of University of Surabaya's Silver Anniversary next year. Such a level of maturity prompts us to contribute more to a larger scale. An international event will have greater exposure to international community, and consequently greater impact to us all.

The following process, however, was far from easy. We were inexperienced, but we were faithful to our mission. It took us some time until we were able to formulate the conference theme, found prominent scholars in the selected theme, and negotiated with them. We are very grateful that all four speakers whom we approached are here with us today, to deliver their insights on opportunities and challenges in sustainable technology and innovation. Let's give our big hands to them!

Sessions beyond those with our invited speakers will deliver four sub-themes, namely: *sustainable design & innovation*, *sustainable manufacturing & processes*, *sustainable energy & earth resources*, and *the role of IT in sustainable enterprise*. We are glad to inform you that our conference has attracted 67 papers from the first round of acceptance. After careful selection by a panel that consists of high-profile international reviewers around the world, we passed 50 papers. We are thankful to our international reviewers who worked very hard providing feedback to the submitted papers. We are indebted to such great service that they have given.

I sincerely hope that the exchange of knowledge throughout this event, be it from within the substance of academic papers or during the conference time, will enhance our professional network and benefit us in the long run. Thank you to all our speakers, reviewers, participants, and most of all my committee members who have been hand-in-hand with me in this long journey! You all have made our dream come true!

We hope you will have a wonderful conference and memorable stay in Bali thisweek. We are looking forward to seeing you again in the next two years!

Assoc. Prof. Eric Wibisono, Ph.D.

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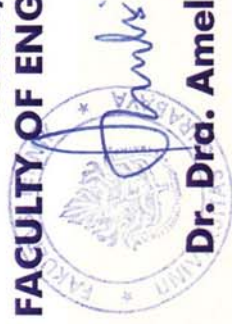
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